

CLAIMS:

What is claimed is:

1. A flexible material comprising:

interwoven fibers;

5 means for passing a current and generating localized heating interspersed among the fibers;

at least one microcapsule, situated on or within the interwoven fibers and means for passing a current, containing a substance and releasing said substance upon rupture due to localized heating generated by selectively heating the means for passing a current; and

10 means for controlling the current passed through the means for passing a current to enable controlled localized heating.

2. The flexible material of Claim 1, wherein the means for passing a current and generating localized heating further comprises conductive fibers.

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3. The flexible material of Claim 1, wherein the means for passing a current and generating localized heating further comprises conductive ink.

4. The flexible material of Claim 1, wherein the at least one microcapsule further

20 comprises a thermo-plastic polymer.

5. The flexible material of Claim 4, wherein the thermo-plastic polymer forms the at least one microcapsule containing the substance to be released.

6. The flexible material of Claim 1, wherein the at least one microcapsule releases the substance upon reaching its melting point.

7. The flexible material of Claim 6, wherein the substance has a lower vapor point than the melting point of the at least one microcapsule.

8. The flexible material of Claim 1, wherein the substance consists of at least one of oil, liquid, and solid material.

9. The flexible material of Claim 1, wherein the substance generates a scent upon release into the ambient environment.

10. The flexible material of Claim 1, wherein the means for controlling the current further comprises a power source, and a current path selector.

11. The flexible material of Claim 10, wherein the means for controlling the current further comprises at least one programmable sensor which determines when to activate and deactivate the means for passing a current.

12. The flexible material of Claim 11, wherein the at least one programmable sensor senses when a predetermined number of microcapsules have ruptured.

13. The flexible material of Claim 10, wherein the means for controlling the current further comprises a timer.

14. The flexible material of Claim 13, wherein the timer determines when to deactivate the means for passing a current based upon the melting point of the at least one microcapsule, the number of microcapsules, and the material properties of the substance contained in the at least one microcapsule.

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15. The flexible material of Claim 1 further comprising multiple microcapsules wherein a first portion of the microcapsules contain a first substance and a second portion of the microcapsules contain a second substance.

10 16. The flexible material of Claim 15, wherein the first substance and the second substance have different material properties.

17. The flexible material of Claim 16, wherein the different material properties consist of at least one of scent, melting-point, viscosity, physical state, color, flavor, chemical
15 composition, and texture.

18. The flexible material of Claim 15, wherein the first portion of microcapsules containing the first substance are grouped on or within an area of the flexible material such that the means for controlling the current locally heats the area and enables the release of
20 the first substance.

19. The flexible material of Claim 16, wherein the means for controlling the current allows local heating of either the first or the second portion of microcapsules and controllably enables the release of the first or second substance.

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20. The flexible material of Claim 16, wherein the means for controlling the current allows local heating of both the first and the second portion of microcapsules and controllably enables the release of a portion of the first and second substances.

5 21. The flexible material of Claim 15, wherein the first portion of microcapsules has a different melting point than the second portion of microcapsules.

22. The flexible material of Claim 21, wherein the means for controlling the current further comprises means for locally heating the first and second portion of microcapsules
10 such that only the first portion of microcapsules rupture and release the substance they contain.

23. A flexible material comprising:

interwoven fibers;

15 means for passing a current and generating localized heating interspersed among the fibers;

at least one substance, situated on or within the fibers and means for passing a current, that vaporizes due to localized heating generated by selectively heating the means for passing a current; and

20 means for controlling the current passed through the means for generating localized heating.

24. A method of controllably releasing a substance contained in a flexible material comprising:

integrating fibers and means for passing a current and generating localized heating interspersed among the fibers;

forming at least one microcapsule containing a substance;

incorporating the at least one microcapsule above or within the integrated fibers

5 and means for passing a current;

selectively heating the at least one microcapsule;

rupturing the at least one microcapsule; and

releasing said substance.

10 25. A method of controllably releasing a substance contained in a flexible material comprising:

integrating fibers and means for passing a current and generating localized heating interspersed among the fibers;

15 forming a substance above or within the interwoven fibers and means for passing a current;

selectively heating the substance; and

evaporating said substance.